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EXAMINER	
THOMAS, MIA M	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/826,596	Applicant(s) ZIMMER, MARK	
	Examiner Mia M. Thomas	Art Unit 2609	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-16_ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-16_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _16 April 2004_ is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _see attached_.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims **1, 2, 5, 9-12, 15,16** are rejected under 35 U.S.C. 102(b) as being anticipated by Cok (US 5,710,839).

Regarding Claims 1 and 11, Cok discloses a method of applying a blur to an image ("FIG. 2 depicts the steps of the process of the present invention...at column 2, line 31), and a machine readable medium having embodied thereupon instructions executable by a machine to perform the following method steps ("The present invention as illustrated in FIG. 1 includes a camera 10 such as a the Eastman Kodak Co. DCS200 camera, which captures an image 12 of about 4 megabytes that includes features that are undesirable. Although a camera image source is shown the image source could be other devices such as an image storage device like a compact disk. The image 12 once it is received is stored in a computer 14, such as the SUNSPARK workstation from Sun Microsystems or the Kodak EktronBOSS processor having matrix process accelerators, and used to drive a

display 16." at column 2, line 66): the method comprising the steps of: defining a primary kernel to compute an output pixel as a weighted average of a plurality of pixels of the image wherein a spatial relationship between the output pixel and the plurality of pixels is determined by a step size of the primary kernel; (Following the process of Figure 1, numeral 26 "automatically performs the obscuration using a conventional convolution technique in which the kernel is iteratively applied from the outside to the center to obscure the details in the image 12 in the region of interest." At column 3, line 15; Figures 5a-5d) applying the primary kernel to each pixel of the image to produce an intermediate result ("The process applies 44 the kernel to the data which can be a conventional convolution operation or a specialized operation that takes account of the characteristics of the kernels...." at column 4, line 25 producing Figure 1, numeral 46); increasing the step size of the primary kernel to create a higher order primary kernel and applying the higher order primary kernel to the intermediate result to produce a result image ("Each level is processed before the next, although some computations may be performed concurrently... The results are stored 46 in the original matrix and the kernel is moved 48 by incrementing the pointers." at column 4, line 20).

Regarding Claims 2 and 12, Cok discloses the method of claim 1 further comprising and the machine readable medium of claim 11, wherein the method steps executable by the machine further comprise: defining a secondary kernel to compute an output pixel as a weighted average of a plurality of pixels of the image wherein a spatial relationship between the output pixel and the plurality of pixels is determined by a step size of the secondary kernel and wherein the weighted average of the secondary kernel is different from the weighted average of the primary kernel ; applying the secondary

kernel to each pixel of the result image to produce a second intermediate result ("Each kernel is used on one of the four sides of the rectangular region of interest. Alternatively, the kernels can be considered as the same kernel but rotated when applied to each of the four sides. That is, each kernel is symmetric inside the kernel about a normal to the surface and each kernel is rotationally symmetric. That is, if the kernel is rotated and applied to the same data the same result will be produced. The four kernels are shown in FIGS. 5A-5D." at column 4, line 3).

Regarding Claims 9 and 15, Cok discloses the method of any of claims 1-5 and the machine readable medium of any of claims 11-14 wherein the step size is computed proportional to a regular factor raised to a power determined by a current kernel application step number ("The features of the kernel which improve efficiency and image quality include: making all element values a power of two, so that only shifts (instead of multiplies) and adds are required; making the sum of the kernel elements a power of two..." at column 3, line 30).

Regarding Claims 10 and 16, Cok discloses the method of claim 9 and the method of claim 15 wherein the step size is horizontal in even subpasses and vertical in odd subpasses ("The final level shown in FIG. 10 will occur when the region of interest is square and has an even number of pixels in each dimension. If the area is square but has an odd number of pixels in each dimension, the last level will contain a single pixel as shown in FIG. 11. (FIGS. 11 through 14 show only the last few levels of a larger region of interest.)" at column 5, line 26; "No multiply or divide operations need to be done, only shifts and adds. Tracking the location of the pixel arguments for the kernels is more work, but the total is much less than required for a conventional convolution, for

example. In addition, the special cases FIGS. 11 through 12, only pertain to regions of interest with odd dimensions. If the regions of interest are restricted to even row or column sizes, the special cases do not obtain and further simplification can be achieved." at column 6, line 4).

Regarding Claim 5, Cok discloses the method of claim 1 wherein the step size is further increased to create a successively higher order primary kernel and the successively higher order primary kernel is applied to a previous intermediate result to produce a next intermediate result until a predetermined step size limit is reached ("The shape of the region used for processing can be arbitrary as long as it is a closed curve and the kernels of FIGS. 17 and 18 modified according to curve sharpness can be used to process the region. Thus, it is possible for the user to outline the area to be obscured using conventional drawing techniques and have only that limited region obscured." at column 10, line 9).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims **3, 4, 6-8, 13, 14** are rejected under 35 U.S.C. 103(a) as being unpatentable over Cok (US 5,710,839) in combination with Herf (US 6,925,210 B2).

Cok teaches the method and the machine readable medium of that method, having the steps of applying a blur to an image as disclosed in claims 1,2,11, and 12 as taught in the 102 (b) rejection above.

Cok does not disclose determining a final result by interpolating between the result image and the second intermediate result.

Regarding Claims 3 and 13, Herf discloses the method of claim 2 further comprising; and the machine readable medium of claim 12, wherein the method steps executable by the machine further comprise: determining a final result by interpolating between the result image and the second intermediate result (Following the flowchart of Figure 5, Figure 5, numeral 530 teaches the "generated final blurred image"; At Figure 5, numeral 501 through numeral 531, the process for determining a final result (Fig.5, numeral 530) by interpolation (Fig.5, numeral 510) between the result image and the second intermediate result (numeral 510) is described herein; "Figure 5 is a flowchart depicting the generalized image blurring method of Figure 2..." at column 2, line 49).

At the time that the invention was made, it would have been obvious to add the determination of the final result by interpolation, by method and to the machine readable medium, as taught by Herf to the method and machine readable medium of applying a blur to an image as disclosed by Cok because "large blurs are too expensive to be implemented directly using accumulation buffer techniques" (Herf). When the user is allowed to transform the intermediate results the blurring method is more efficiently used throughout.

Cok teaches the method and the machine readable medium of that method, having the steps of applying a blur to an image as disclosed in claims 1,2,11, and 12 and taught in the 102 (b) rejection above.

Cok does not disclose the method steps further comprising applying the secondary kernel to each pixel of the second intermediate result to produce a third intermediate result; and determining a final result by interpolating between the second intermediate result and the third intermediate result.

Regarding Claims 4 and 14, Herf discloses The method of claim 2 further comprising and the machine readable medium of claim 11, wherein the method steps executable by the machine further comprise: applying the secondary kernel to each pixel of the second intermediate result to produce a third intermediate result; and determining a final result by interpolating between the second intermediate result and the third intermediate result ("The image blurring method described above takes advantage of the ability of graphics hardware to do recursive rendering, and exploits this recursive rendering capability in a novel way to blur images in real-time, without a great deal of computational precision." at column 7, line 19).

At the time that the invention was made, it would have been obvious to add the additional method steps and the additional machine readable medium method steps executable by the machine by application of the secondary kernel to each pixel of the secondary intermediate result to produce the third intermediate result to the method and machine readable medium of applying a blur to an image as disclosed by Cok because "In graphics hardware, a conventional implementation of a box filter renders the original image translated multiple times, and then averages all of the translated

images together to produce a resulting, blurred image. These repeated operations traditionally use "accumulation buffer" hardware to perform the averaging. Accumulation buffers can be used to implement full-screen anti-aliasing techniques, soft shadows, and motion blur effects."(Herf)

Cok teaches the method and the machine readable medium of that method, having the steps of applying a blur to an image as disclosed in claim 1.

Cok does not disclose that the blur is a Gaussian blur computed by performing each step in a horizontal direction and in a vertical direction.

Regarding Claim 6, Herf discloses, the method of any of claims 1-5 wherein the blur is a Gaussian blur computed by performing each step in a horizontal direction and in a vertical direction ("The motion blurs described above can be extended to generate a two-dimensional blur, which approximates the so-called "Gaussian blur." To do so, the blurring method 200 is first performed along a first axis. Then, the blurring method 200 is performed a second time, using the result of the first run, along a second axis that is perpendicular to first axis, exploiting the separability of the filter to do the work efficiently. This Gaussian blur approximation method 500 is depicted in flowchart form in FIG. 5." at column 5, line 24).

At the time that the invention was made, it would have been obvious to add a Gaussian blur as taught by Herf to the method of any of claims 1-5, herein taught by Cok in claims 1 and 2 because "2D Gaussian blur operations are used in many image processing applications. The execution times of these operations can be rather long, especially where large kernels are involved. Gaussian blurs are separable into row and column

operations", which allows for robust computational efficiency. (Batchelor et al. "An Efficient algorithm for Gaussian Blur using finite state Machines").

Cok teaches the method and the machine readable medium of that method, having the steps of applying a blur to an image as disclosed in claim 1.

Cok does not disclose wherein the blur is a blur selected from the group consisting of: a motion blur, a zoom blur, a radial blur, and a spatially dependent blur.

Regarding Claim 7, Herf teaches The method of any of claims 1-5 wherein the blur is a blur selected from the group consisting of: a motion blur, a zoom blur, a radial blur, and a spatially dependent blur ("The generalized image blurring method 200 may be used to carry out various types of image blurs known in the art. For example, the method may be used to carry out a motion blur, a Box blur, a Gaussian blur, a Spin blur, and a Zoom blur, each of which will now be described separately." at column 4, line 1).

At the time that the invention was made, it would have been obvious to add a blur selected from the group consisting of: a motion blur, a zoom blur, a radial blur, and a spatially dependent blur as taught by Herf to the method of any of claims 1-5, herein taught by Cok in claims 1 and 2 because "the above-described image blurring operations were, for consistency and ease of explanation, ... the image blurring method described above takes advantage of the ability of graphics hardware to do recursive rendering, and exploits this recursive rendering capability in a novel way." (Herf)

Cok teaches the method and the machine readable medium of that method, having the steps of applying a blur to an image as disclosed in claim 1.

Cok does not disclose the method of any of claims 1-5 wherein the steps are performed by a plurality of GPU fragment programs.

Regarding Claim 8, Herf teaches, the method of any of claims 1-5 wherein the steps are performed by a plurality of GPU fragment programs ("The graphics hardware device 108 may be any one of numerous devices known in the art including, but not limited to, the GeForce family of video hardware available from NVIDIA Corporation, the Radeon family of video hardware available from ATI Corporation, and a variety of graphics hardware available from Matrox, 3Dlabs, and SGI." at column 3, line 8).

At the time that the invention was made, it would have been obvious to add the method of any of claims 1-5 wherein the steps are performed by a plurality of GPU fragment programs as taught by Herf to the method of any of claims 1-5, herein taught by Cok in claims 1 and 2 for example, "Producers of motion video programs use a variety of special effects to produce a final product. A graphics editor performs the task of adding special effects to motion video segments using a graphics workstation. It would be advantageous to use a plurality of GPU fragment programs because "Feathering is a special effect that blurs one or more portions of a video image. Feathering often is used when creating a composite video image from a foreground image and a background image. The graphics editor feathers the border between the images thereby blending the images together to create an effect that the two images are truly one image. (Gonsalves et al.)

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mia M. Thomas whose telephone number is 571-270-1583. The examiner can normally be reached on Monday-Friday 7:30am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Werner can be reached on 571-272-7401. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Mia M Thomas
Examiner
Art Unit 2609

MMT

BRIAN WERNER
SUPERVISORY PATENT EXAMINER